



U.S. Department  
of Transportation

**Federal Aviation  
Administration**

**FAA-S-8081-5D**  
with change 1

# **AIRLINE TRANSPORT PILOT AND AIRCRAFT TYPE RATING**

## **Practical Test Standards**

**for**

**AIRPLANE**

**February 2001**

**FLIGHT STANDARDS SERVICE**  
Washington, DC 20591



## **NOTE**

Examiners may use the practical test standards, dated August 1998, to evaluate airline transport pilot and type rating applicants, until February 1, 2001.

Material in FAA-S-8081-5D will be effective February 1, 2001. All previous editions of the Airline Transport Pilot and Aircraft Type Rating—Airplane Practical Test Standards will be obsolete as of this date.



## FOREWORD

The Airline Transport Pilot and Aircraft Type Rating—Airplane Practical Test Standards (PTS) book has been published by the Federal Aviation Administration (FAA) to establish the standards for airline transport pilot and aircraft type rating practical tests for airplanes. FAA inspectors, designated pilot examiners, and check airmen (referred to as examiners throughout the remaining practical test standard) shall conduct practical tests in compliance with these standards. Flight instructors and applicants should find these standards helpful in practical test preparation.



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**Change 1: 02/07/01**

**Reason:** To correct omissions and errors in the original.

**V. AREA OF OPERATION: INSTRUMENT PROCEDURES**

**TASK C: PRECISION INSTRUMENT APPROACHES**

**TASK E: CIRCLING APPROACH**

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# **INTRODUCTION**

## **General Information**

The Flight Standards Service of the Federal Aviation Administration (FAA) has developed this practical test standard (PTS) to be used by examiners when conducting airline transport pilot and aircraft type rating practical tests (knowledge of the equipment and flight tasks) in airplanes. Instructors are expected to use this book when preparing applicants for practical tests. Applicants should refer to these standards during their training.

Information considered directive in nature is described in this practical test standard in terms, such as “shall” and “must” indicating the actions are mandatory. Guidance information is described in terms, such as “should” and “may” indicating the actions are desirable or permissive but not mandatory.

The FAA gratefully acknowledges the valuable assistance provided by many individuals and companies who contributed their time and talent in assisting with the development of this practical test standard.

This practical test standard may be downloaded from the Regulatory Support Division's, AFS-600, web site at <http://afs600.faa.gov>. Subsequent changes to this standard, in accordance with AC 60-27, Announcement of Availability: Changes to Practical Test Standards, will also be available on AFS-600's web site and then later incorporated into a printed revision.

This publication may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

Comments regarding this publication should be sent to:

U.S. Department of Transportation  
Federal Aviation Administration  
Flight Standards Service  
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## Practical Test Standard Concept

Title 14 of the Code of Federal Regulations (14 CFR) part 61 specifies the areas in which knowledge and skills must be demonstrated by the applicant before the issuance of an airline transport pilot certificate and/or a type rating in airplanes. The CFRs provide the flexibility to permit the FAA to publish practical test standards (PTSs) containing specific TASKS in which pilot competency must be demonstrated. The FAA will revise this book whenever it is determined that changes are needed in the interest of safety. Adherence to provisions of the regulations and the PTS is mandatory for the evaluation of pilot applicants. For some aircraft types, provisions of FAA Flight Standardization Board (FSB) Reports may specify details as to how 14 CFR part 61 and this PTS apply to certain maneuvers, TASKS, procedures or knowledge areas.

Flight proficiency for certification of airmen employed by 14 CFR part 121 and 135 operators and FAA personnel assigned to part 121 and 135 certificates, is demonstrated when the maneuvers and procedures required for the issuance of a type rating for a specific airplane are accomplished satisfactorily. Type rating requirements may be determined through SFAR 58, advisory circular (AC) 120-53, FSB Reports, and Flight Manual. Further, successful completion of a proficiency check under part 121 or the successful completion of both a competency check and a pilot-in-command instrument proficiency check under part 135, satisfy the requirements for the appropriate aircraft rating. Unless the Administrator requires certain or all TASKS to be performed, the examiner who conducts the practical test for an airline transport pilot certificate or added rating may waive any of the TASKS for which the Administrator approves waiver authority.

For those crewmembers employed by 14 CFR parts 121 and 135 operators, and those FAA personnel assigned to part 121 and 135 certificates, the Administrator provides waiver discretion to the check airman (also a qualified examiner), or the FAA inspector conducting the check, for the following maneuvers/procedures.

1. Area arrival or area departure, but not both.
2. Two of three stalls. (One demonstrated in a turn, with a bank of 15 to 30°)
3. Holding.
4. Second nonprecision approach.
5. Steep turns.
6. Specific flight characteristics.

Waiver authority requires that the applicant is trained to proficiency in all six maneuvers/procedures in the operator's FAA-approved training program.

**NOTE:** Pilots employed by an air carrier certificate holder, operating under part 121, whose manual prohibits a circling approach when the weather is below 1,000 feet and 3 miles' visibility are not required to be checked on the circling approach and landing from a circling approach. Airline transport pilot and aircraft type rating certificates issued without training and checking in the circling maneuver will be annotated "**CIRC. APCH. VMC ONLY.**" This restriction may be removed when the circling approach is satisfactorily demonstrated to a designated examiner (also a check airman), or FAA inspector, in the appropriate type airplane.

## **Practical Test Description**

This practical test contains the Airline Transport Pilot and Aircraft Type Rating Practical Test Standards—Airplane.

The Airline Transport Pilot and Aircraft Type Rating Practical Test Standards—Airplane includes AREAS OF OPERATION and TASKS for the initial issuance of an airline transport pilot certificate and for the addition of category, class, and aircraft type ratings to that certificate.

The AREAS OF OPERATION are divided into two sections. The first AREA OF OPERATION in each section is conducted on the ground to determine the applicant's knowledge of the aircraft, equipment, performance, and limitations. The eight AREAS OF OPERATION in the second section are considered to be in flight. All eight AREAS OF OPERATION in the second section test the applicant's skill and knowledge. If all TASKS, of the practical test, are not completed on one date, all remaining TASKS of the test must be satisfactorily completed not more than 60 calendar days after the date on which the applicant began the test.

AREAS OF OPERATION are phases of the practical test arranged in a logical sequence within each standard. They begin with preflight preparation and end with postflight procedures. The examiner may combine TASKS with similar objectives and conduct the practical test in any sequence that will result in a complete and efficient test.

TASKS are titles of knowledge areas, flight procedures, or maneuvers appropriate to an AREA OF OPERATION.

NOTE is used to emphasize special considerations required in the AREA OF OPERATION.

The Objective lists the important ELEMENTS that must be satisfactorily performed to demonstrate competency in a TASK. The Objective includes:

1. specifically what the applicant should be able to do;
2. the conditions under which the TASK is to be performed; and
3. the acceptable standards of performance.

The REFERENCE identifies the publication(s) that describe(s) the TASK. Descriptions of TASKS are not included in the practical test standards because this information can be found in the listed references, as amended. Publications other than those listed may be used for references if their content conveys substantially the same meaning as the referenced publications.

This practical test standard is based on the following references.

14 CFR part 1	Definitions and Abbreviations
14 CFR part 61	Certification: Pilots and Flight Instructors
14 CFR part 91	General Operating and Flight Rules
SFAR 58	Advanced Qualification Program
FAA-H-8083-3	Airplane Flying Handbook
AC 00-6	Aviation Weather
AC 00-45	Aviation Weather Services
AC 60-22	Aeronautical Decision Making
AC 60-28	English Language Skill Standards
AC 61-27	Instrument Flying Handbook
AC 61-84	Role of Preflight Preparation
AC 120-28	Criteria for Approval of Category III Landing Weather Minima
AC 120-29	Criteria for Approving Category I and Category II Landing Minima for part 121 Operators
AC 120-40	Airplane Simulator Qualification
AC 120-45	Airplane Flight Training Device Qualification
AC 120-46	Use of Advanced Training Devices
AC 120-51	Crew Resource Management Training
AC 120-53	Crew Qualification and Pilot Type Rating Requirements for Transport Category Aircraft Operated Under part 121
AC 120-54	Advanced Qualification Program
AC 120-62	Takeoff Safety Training Aid
FSB Reports	Flight Standardization Board Reports
AFM	FAA-Approved Airplane Flight Manual
AIM	Aeronautical Information Manual

Other	Pertinent Pilot's Operating Handbooks and Flight Manuals En Route Low and High Altitude Charts Profile Descent Charts
DP	Departure Procedures
STAR/FMSP	Standard Terminal Arrival/Flight Management Systems Procedures
AFD	Airport Facility Directory
FDC NOTAM	National Flight Data Center Notices to Airmen
IAP	Instrument Approach Procedure Charts

**Note:** The latest revision of these references should be used.

## **Use of the Practical Test Standards**

The TASKS, in this PTS, are for airplanes. These TASKS apply to the applicant who seeks an airline transport pilot certificate; the addition of a category, class, or aircraft type rating on that certificate. The applicant that holds a private or commercial pilot certificate and is seeking the addition of an aircraft type rating on that certificate, must have the proper category/class rating or accomplish the appropriate TASKS in the private/commercial pilot PTS's, which are not in this PTS.

With certain exceptions, some described by NOTES, all TASKS are required. However, when a particular ELEMENT is not appropriate to the aircraft or its equipment, that ELEMENT, at the discretion of the examiner, may be omitted. Examples of ELEMENT exceptions are integrated flight systems for aircraft not so equipped, operation of landing gear in fixed gear aircraft, multiengine tasks in single-engine aircraft, or other situations where the aircraft operation is not compatible with the requirement of the ELEMENT.

Examiners must develop a written plan of action that includes the order and combination of TASKS to be demonstrated by the applicant in a manner that results in an efficient and valid test. Although TASKS with similar Objectives may be combined to conserve time, the Objectives of all TASKS must be demonstrated and evaluated at some time during the practical test. It is of utmost importance that the examiner accurately evaluate the applicant's ability to perform safely as a pilot in the National Airspace System. The examiner may simulate/act as air traffic control (ATC) while conducting the practical test.

## Special Emphasis Areas

*Examiners shall place special emphasis upon areas of aircraft operations considered critical to flight safety. Among these are positive aircraft control, positive exchange of the flight controls procedure (who is flying the aircraft), collision avoidance, wake turbulence avoidance, use of available automation, land and hold short operations (LAHSO), communication management, runway incursion, controlled flight into terrain (CFIT), crew resource management (CRM), aeronautical decision making (ADM), and other areas deemed appropriate to any phase of the practical test. Although these areas may not be specifically addressed under each TASK, they are essential to flight safety and will be critically evaluated during the practical test. In all instances, the applicant's actions will relate to the complete situation. The examiner's role regarding ATC, crew resource management, and the duties and responsibilities of the examiner through all phases of the practical test must be explained to and understood by the applicant, prior to the test.*

## Practical Test Prerequisites: Airline Transport Pilot

An applicant for the original issuance of an airline transport pilot certificate is required (prior to the practical test) by 14 CFR part 61 to:

1. have passed the appropriate airline transport pilot knowledge test within 24 months before the date of the practical test;
2. have the aeronautical experience prescribed in 14 CFR part 61, that apply to the aircraft category and class rating;
3. have a minimum of a third-class medical certificate, if a medical certificate is required;
4. be at least 23 years of age; and
5. be able to read, speak, write, and understand the English language. If there is a doubt, use AC 60-28, English Language Skill Standards.

**NOTE:** The 24-month limitation does not apply if the applicant:

1. is employed as a flight crewmember by a certificate holder under 14 CFR parts 121, 125, or 135 at the time of the practical test and has satisfactorily accomplished that operator's approved—
  - a. Pilot in command aircraft qualification training program that is appropriate to the certificate and rating sought; and
  - b. Qualification training requirements appropriate to the certificate and ratings sought; or

2. is employed as a flight crewmember in scheduled U.S. military air transport operations at the time of the practical test, and has accomplished the pilot in command aircraft qualification training program that is appropriate to the certificate and rating sought.

### **Practical Test Prerequisites: Aircraft Type Rating**

An applicant for a type rating in an airplane is required by 14 CFR part 61 to have:

1. the applicable experience;
2. a minimum of a third-class medical certificate, if a medical certificate is required;
3. the appropriate category and class rating, or accomplish the appropriate TASKS in the private/commercial pilot PTS's, which are not in this PTS;
4. received and logged ground training from an authorized ground or flight instructor and flight training from an authorized flight instructor, on the AREAS OF OPERATION in this practical test standard that apply to the aircraft type rating sought; and
5. received a logbook endorsement from the instructor who conducted the training, certifying that the applicant completed all the training on the AREAS OF OPERATION in this practical test standard that apply to the aircraft type rating sought.

If the applicant is an employee of a part 121 or part 135 certificate holder, the applicant may present a training record that shows the satisfactory completion of that certificate holder's approved pilot in command training program for the aircraft type rating sought, instead of the requirements of 4 and 5 above.

An applicant who holds the private pilot or limited commercial pilot certificate is required to have passed the appropriate instrument rating knowledge test since the beginning of the 24th month before the practical test is taken if the test is for the concurrent issuance of an instrument rating and an aircraft type rating.

If an applicant is taking a practical test for the issuance of a private or commercial pilot certificate with an airplane rating, in an aircraft that requires a type rating, private pilot practical test standards or commercial pilot practical test standards, as appropriate to the certificate, should be used in conjunction with this PTS. Also, the current instrument rating practical test standard should be used in conjunction with this PTS if the applicant is concurrently taking a practical test for the issuance of an instrument rating and a type rating. The TASKS that are in the private pilot, commercial pilot, or instrument rating PTS (and not in this PTS) must be accomplished.

## Seaplane Class Rating

If the applicant does not hold a commercial pilot certificate with a seaplane class rating and desires an airplane class rating of single-engine sea, or multiengine sea, the latest edition of FAA-S-8081-12, Commercial Pilot Practical Test Standards—Airplane, shall be used in conjunction with this practical test standard. Commercial pilot practical test standards, Section 3, Commercial Pilot Airplane Single-Engine Sea, shall be used with single-engine aircraft. Commercial pilot practical test standards, Section 4, Commercial Pilot Airplane Multiengine Sea, shall be used with multiengine aircraft.

In addition to the TASKS in this practical test standard, the following TASKS from the commercial pilot practical test standards must be accomplished for an airplane class rating of single-engine sea or multiengine sea.

1. Water and Seaplane Characteristics.
2. Seaplane Bases, Maritime Rules, and Aids to Marine Navigation.
3. Sailing.
4. Seaplane Base/Water Landing Site Markings and Lighting.
5. Glassy Water Takeoff and Climb.
6. Glassy Water Approach and Landing.
7. Rough Water Takeoff and Climb.
8. Rough Water Approach and Landing.
9. Confined-Area Takeoff and Climb.
10. Confined-Area Approach and Landing.
11. Anchoring.
12. Docking and Mooring.
13. Beaching.
14. Ramping.

In addition to the above TASKS, if the applicant does not have commercial multiengine class rating, the following TASK from the commercial pilot practical test standards must be accomplished for an airplane class rating of multiengine sea:

- Engine Inoperative-Loss of Directional Control Demonstration.

An amphibian type rating shall bear the limitation “LIMITED TO LAND” or “LIMITED TO SEA,” as appropriate, unless the applicant demonstrates proficiency in both land and sea operations.



## **Aircraft Type Ratings Limited to VFR**

Pilot applicants who wish to add a type rating, limited to VFR, to their certificate must take a practical test that includes the following items, as listed on pages 1-i, 2-i, and 2-ii of this document:

### **Section One: PREFLIGHT PREPARATION**

#### **I. AREA OF OPERATION: PREFLIGHT PREPARATION.**

- A. Equipment examination.
- B. Performance and limitations.

### **Section Two: PREFLIGHT PROCEDURES, INFLIGHT MANEUVERS, AND POSTFLIGHT PROCEDURES**

#### **II. AREA OF OPERATION: PREFLIGHT PROCEDURES.**

- A. Preflight inspection.
- B. Powerplant start.
- C. Taxing.
- D. Pretakeoff checks.

#### **III. AREA OF OPERATION: TAKEOFF AND DEPARTURE PHASE.**

- A. Normal and crosswind takeoff.
- B. Powerplant failure during takeoff. (TASK C)
- C. Rejected takeoff. (TASK D)

#### **IV. AREA OF OPERATION: INFLIGHT MANEUVERS.**

- A. Steep turns.
- B. Approaches to stalls.
- C. Powerplant failure—multiengine airplane.
- D. Powerplant failure—single-engine airplane.
- E. Specific flight characteristics.

#### **V. AREA OF OPERATION: INSTRUMENT PROCEDURES.** (Not applicable)

#### **VI. AREAS OF OPERATION: LANDINGS AND APPROACHES TO LANDINGS.**

- A. Normal and crosswind landings.
- B. Landing with simulated powerplant failure—multiengine airplanes. (TASK C)

- C. Rejected landing. (TASK E)
- D. Landing from a no flap or a nonstandard flap approach. (TASK F)

VII. AREA OF OPERATION: NORMAL AND ABNORMAL PROCEDURES.

VIII. AREA OF OPERATION: EMERGENCY PROCEDURES.

IX. AREA OF OPERATION: POSTFLIGHT PROCEDURES.

- A. After-landing procedures.
- B. Parking and securing.

### **Removal of the “Limited to Center Thrust” Limitation**

The removal of the “Limited to Center Thrust” limitation at the airline transport pilot certificate level requires an applicant to satisfactorily perform the following AREAS OF OPERATION and TASKS from FAA-S-8081-5D, Airline Transport Pilot and Aircraft Type Rating Practical Test Standards—Airplane and also the following AREAS OF OPERATION and TASKS from FAA-S-8081-12A, Commercial Pilot Practical Test Standards—Airplane during the practical test in a multiengine airplane that has a manufacturer’s published  $V_{MC}$  speed.

From FAA-S-8081-5D, Airline Transport Pilot and Aircraft Type Rating Practical Test Standards—Airplane:

- AREA OF OPERATION III: TAKE OFF AND DEPARTURE PHASE
  - TASK C: POWERPLANT FAILURE DURING TAKEOFF
  - TASK D: REJECTED TAKEOFF
- AREA OF OPERATION IV: INFLIGHT MANEUVERS
  - TASK C: POWERPLANT FAILURE-MULTIENGINE AIRPLANE
- AREA OF OPERATION VI: LANDINGS AND APPROACHES TO LANDINGS
  - TASK C: APPROACH AND LANDING WITH (SIMULATED) POWERPLANT FAILURE-MULTIENGINE

From FAA-S-8081-12A, Commercial Pilot Practical Test Standards—  
Airplane:

- AREA OF OPERATION I: PREFLIGHT PREPARATION
  - TASK F: PRINCIPLES OF FLIGHT-ENGINE INOPERATIVE
- AREA OF OPERATION VIII: EMERGENCY OPERATIONS
  - TASK C: ENGINE INOPERATIVE - LOSS OF DIRECTIONAL CONTROL DEMONSTRATION

**Note:** A flight simulator or flight training device representative of a multiengine airplane, with a manufacturer's published  $V_{MC}$  speed, may be used if used in accordance with a program approved for a 14 CFR part 142 certificate holder.

### **Aircraft and Equipment Requirements for the Practical Test**

The applicant is required to provide an appropriate and airworthy aircraft for the practical test. Its operating limitations must not prohibit the TASKS required on the practical test. Flight instruments are those required for controlling the aircraft without outside references. The aircraft must have radio equipment for communications with air traffic control and the performance of instrument approach procedures. If the aircraft/flight training device/flight simulator has a GPS properly installed, the applicant must demonstrate GPS approach proficiency.

**NOTE:** The practical test must be performed in actual or simulated instrument conditions, unless the practical test cannot be accomplished under instrument flight rules because the aircraft's type certificate makes the aircraft incapable of operating under instrument flight rules.

### **Use of FAA-Approved Flight Simulator or Flight Training Device**

In the AREA OF OPERATION labeled "PREFLIGHT PREPARATION," the TASKS are knowledge only. These TASKS do not require the use of a flight training device (FTD), flight simulator, or an aircraft to accomplish, but they may be used.

Each inflight maneuver or procedure must be performed by the applicant in an FTD, flight simulator, or an aircraft. Appendix 1 of this practical test standard should be consulted to identify the maneuvers or procedures that may be accomplished in an FTD or flight simulator. The level of FTD or flight simulator required for each maneuver or procedure will also be found in appendix 1.

When accomplished in an aircraft, certain TASK elements may be accomplished through “simulated” actions in the interest of safety and practicality, but when accomplished in an FTD or flight simulator, these same actions would not be “simulated.” For example, when in an aircraft, a simulated engine fire may be addressed by retarding the throttle to idle, simulating the shutdown of the engine, simulating the discharge of the fire suppression agent, and simulating the disconnection of associated electrics, hydraulics, pneumatics, etc.

However, when the same emergency condition is addressed in an FTD or a flight simulator, all TASK elements must be accomplished as would be expected under actual circumstances. Similarly, safety of flight precautions taken in the aircraft for the accomplishment of a specific maneuver or procedure (such as limiting altitude in an approach to stall, setting maximum airspeed for a rejected takeoff) need not be taken when an FTD or a flight simulator is used.

It is important to understand that whether accomplished in an FTD, a flight simulator, or the aircraft, all TASKS and TASK elements for each maneuver or procedure will have the same performance criteria applied for determination of overall satisfactory performance.

### **Examiner Responsibility**

The examiner who conducts the practical test is responsible for determining that the applicant meets the standards outlined in the Objective of each TASK within the AREAS OF OPERATION, in the practical test standard. The examiner shall meet this responsibility by determining that the applicant's knowledge and skill meet the Objective in all required TASKS.

The equipment examination must be closely coordinated and related to the flight portion of the practical test, but must not be given during the flight portion of the practical test. The equipment examination should be administered prior (it may be the same day) to the flight portion of the practical test. The examiner may accept written evidence of the equipment exam if the exam is approved by the Administrator and administered by an individual authorized by the Administrator. The examiner shall use whatever means deemed suitable to determine that the applicant's equipment knowledge meets the standard.

The AREAS OF OPERATION in Section 2 contain TASKS which include both “knowledge” and “skill” ELEMENTS. The examiner shall ask the applicant to perform the skill ELEMENTS. Knowledge ELEMENTS not evident in the demonstrated skills may be tested by questioning, at anytime, during the flight event. Questioning in flight should be used judiciously so that safety is not jeopardized. Questions may be deferred until after the flight portion of the test is completed.

For aircraft requiring only one pilot, the examiner may not assist the applicant in the management of the aircraft, radio communications, tuning and identifying navigational equipment, and using navigation charts. If the examiner, other than an FAA Inspector, is qualified and current in the specific make and model aircraft that is certified for two or more crewmembers, he or she may occupy a duty position. If the examiner occupies a duty position on an aircraft that requires two or more crewmembers, the examiner must fulfill the duties of that position. Moreover, when occupying a required duty position, the examiner shall perform crew resource management functions as briefed and requested by the applicant.

**SAFETY OF FLIGHT** shall be the prime consideration at all times. The examiner, applicant, and crew shall be constantly alert for other traffic.

### **Satisfactory Performance**

The ability of an applicant to safely perform the required TASKS is based on:

1. performing the TASKS specified in the AREAS OF OPERATION for the certificate or rating sought within the approved standards;
2. demonstrating mastery of the aircraft with the successful outcome of each TASK performed never seriously in doubt;
3. demonstrating satisfactory proficiency and competency within the approved standards and single-pilot competence if the aircraft is type certificated for single-pilot operations.
4. demonstrating sound judgment and crew resource management.

### **Unsatisfactory Performance**

Consistently exceeding tolerances stated in the TASK Objective, or failure to take prompt, corrective action when tolerances are exceeded, is indicative of unsatisfactory performance. The tolerances represent the performance expected in good flying conditions. Any action, or lack thereof, by the applicant which requires corrective intervention by the examiner to maintain safe flight shall be disqualifying. If the applicant fails the practical test because of a special emphasis area, the Notice of Disapproval shall indicate the associated TASK, i.e.: AREA OF OPERATION IV, Approach to Stalls, failure to clear the area.

**NOTE:** It is vitally important that the applicant, safety pilot, and examiner use proper and effective scanning techniques to observe all other traffic in the area to ensure the area is clear before performing any maneuvers.

If, in the judgment of the examiner, the applicant's performance of any TASK is unsatisfactory, the associated AREA OF OPERATION is failed and therefore the practical test is failed. Examiners shall not repeat TASKS that have been attempted and failed. The examiner or applicant may discontinue the test at any time after the failure of a TASK, which makes the applicant ineligible for the certificate or rating sought. The practical test will be continued only with the consent of the applicant. In such cases, it is usually better for the examiner to continue with the practical test to complete the other TASKS. If the examiner determines that the entire practical test must be repeated, the practical test should not be continued but should be terminated immediately. If the practical test is either continued or discontinued, the applicant is entitled to credit for those AREAS OF OPERATION satisfactorily performed, if the remainder of the practical test is completed within 60 days of when the practical test was discontinued. However, during the retest and at the discretion of the examiner, any AREA OF OPERATION may be reevaluated including those previously passed. Whether the remaining parts of the practical test are continued or not after a failure, a notice of disapproval must be issued.

When the examiner determines that a TASK is incomplete, or the outcome uncertain, the examiner may require the applicant to repeat that TASK, or portions of that TASK. This provision has been made in the interest of fairness and does not mean that instruction or practice is permitted during the certification process. When practical, the remaining TASKS of the practical test phase should be completed before repeating the questionable TASK. If the second attempt to perform a questionable TASK is not clearly satisfactory, the examiner shall consider it unsatisfactory.

If the practical test must be terminated for unsatisfactory performance and there are other AREAS OF OPERATION which have not been tested or still need to be repeated, a notice of disapproval shall be issued listing the specific AREAS OF OPERATION which have not been successfully completed or tested.

When a practical test is discontinued for reasons other than unsatisfactory performance (i.e., equipment failure, weather, illness), FAA Form 8710-1, Airman Certificate and/or Rating Application, and, if applicable, AC Form 8080-2, Airman Written Test Report, should be returned to the applicant. The examiner at that time should prepare, sign, and issue a Letter of Discontinuance to the applicant. The Letter of Discontinuance should identify the portions of the practical test that were successfully completed. The applicant shall be advised that the Letter of Discontinuance must be presented to the examiner, to receive credit for the items successfully completed, when the practical test is resumed and made part of the certification file.

## **Recording Unsatisfactory Performance**

This practical test standard uses the terms "AREA OF OPERATION" and "TASK" to denote areas in which competency must be demonstrated. When a disapproval notice is issued, the examiner must record the applicant's unsatisfactory performance in terms of "AREA OF OPERATION" appropriate to the practical test conducted.

## **Crew Resource Management (CRM)**

CRM "...refers to the effective use of all available resources; human resources, hardware, and information." Human resources "...includes all other groups routinely working with the cockpit crew (or pilot) who are involved in decisions that are required to operate a flight safely. These groups include, but are not limited to: dispatchers, cabin crewmembers, maintenance personnel, and air traffic controllers." CRM is not a single TASK. CRM is a set of competencies which must be evident in all TASKS in this practical test standard as applied to the single pilot or the multicrew operation. CRM competencies, grouped into three clusters of observable behavior, are:

1. COMMUNICATIONS PROCESSES AND DECISIONS
  - a. Briefing
  - b. Inquiry/Advocacy/Assertiveness
  - c. Self-Critique
  - d. Communication with available personnel resources
  - e. Decision making
2. BUILDING AND MAINTENANCE OF A FLIGHT TEAM
  - a. Leadership/Followership
  - b. Interpersonal Relationships
3. WORKLOAD MANAGEMENT AND SITUATIONAL AWARENESS
  - a. Preparation/Planning
  - b. Vigilance
  - c. Workload Distribution
  - d. Distraction Avoidance
  - e. Wake Turbulence Avoidance

CRM deficiencies almost always contribute to the unsatisfactory performance of a TASK. Therefore, the competencies provide an extremely valuable vocabulary for debriefing. For debriefing purposes, an amplified list of these competencies, expressed as behavioral markers, may be found in AC 120-51, as amended, Crew Resource Management Training. These markers consider the use of various levels of automation in flight management systems.

CRM evaluations are still largely subjective. Certain CRM competencies are well-suited to objective evaluation. These are the CRM-related practices set forth in the aircraft manufacturer's or the operator's FAA-approved operating or training manuals as explicit, required procedures. Those procedures may be associated with one or more TASKS in these practical test standards. Examples include required briefings, radio calls, and instrument approach callouts. The evaluator simply observes that the individual complies (or fails to comply) with requirements.

## **How the Examiner Applies CRM**

Examiners are required to exercise proper CRM competencies in conducting tests, as well as expecting the same from applicants.

Pass/Fail judgments based solely on CRM issues must be carefully chosen since they may be entirely subjective. Those Pass/Fail judgments which are not subjective apply to CRM-related procedures in FAA-approved operations manuals that must be accomplished, such as briefings to other crewmembers. In such cases, the operator (or the aircraft manufacturer) specifies what should be briefed and when the briefings should occur. The examiner may judge objectively whether the briefing requirement was or was not met. In those cases where the operator (or aircraft manufacturer) has not specified a briefing, the examiner shall require the applicant to brief the appropriate items from the following note. The examiner may then judge objectively whether the briefing requirement was or was not met.

**NOTE:** The majority of aviation accidents and incidents are due to resource management failures by the pilot/crew; fewer are due to technical failures. Each applicant shall give a crew briefing before each takeoff/departure and approach/landing. If the operator or aircraft manufacturer has not specified a briefing, the briefing shall cover the appropriate items, such as runway, SID/DP/STAR/FMSP/IAP, power settings, speeds, abnormals or emergency prior to or after reaching decision speed (i.e.,  $V_1$  or  $V_{MC}$ ), emergency return intentions, missed approach procedures, FAF, altitude at FAF, initial rate of descent,



DA/DH/MDA, time to missed approach, and what is expected of the other crewmembers during the takeoff/DP and approach/landing. If the first takeoff/departure and approach/landing briefings are satisfactory, the examiner may allow the applicant to brief only the changes, during the remainder of the flight.

### **Applicant's Use of Checklists**

Throughout the practical test, the applicant is evaluated on the use of an appropriate checklist. Proper use is dependent on the specific TASK being evaluated. The situation may be such that the use of the checklist, while accomplishing elements of an Objective, would be either unsafe or impractical, especially in a single-pilot operation. In this case, a review of the checklist after the elements have been accomplished would be appropriate. Use of a checklist should also consider visual scanning and division of attention at all times.

### **Use of Distractions During Practical Tests**

Numerous studies indicate that many accidents have occurred when the pilot has been distracted during critical phases of flight. To evaluate the pilot's ability to utilize proper control technique while dividing attention both inside and outside the cockpit, the examiner shall cause a realistic distraction during the flight portion of the practical test to evaluate the applicant's ability to divide attention while maintaining safe flight.

### **Metric Conversion Initiative**

To assist the pilots in understanding and using the metric measurement system, the practical test standard refers to the metric equivalent of various altitudes throughout. The inclusion of meters is intended to familiarize pilots with its use. The metric altimeter is arranged in 10 meter increments; therefore, when converting from feet to meters, the exact conversion, being too exact for practical purposes, is rounded to the nearest 10 meter increment.



## **SECTION 1**

# **PREFLIGHT PREPARATION**



**SECTION 1 — PREFLIGHT PREPARATION**

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# **I. AREA OF OPERATION: PREFLIGHT PREPARATION**

## **A. TASK: EQUIPMENT EXAMINATION**

REFERENCES: Part 61; POH, AFM.

**Objective.** To determine that the applicant:

1. Exhibits adequate knowledge appropriate to the airplane; its systems and components; its normal, abnormal, and emergency procedures; and uses the correct terminology with regard to the following items—
  - a. landing gear—indicators, float devices, brakes, antiskid, tires, nose-wheel steering, and shock absorbers.
  - b. powerplant—controls and indications, induction system, carburetor and fuel injection, turbocharging, cooling, fire detection/protection, mounting points, turbine wheels, compressors, deicing, anti-icing, and other related components.
  - c. propellers—type, controls, feathering/unfeathering, autofeather, negative torque sensing, synchronizing, and synchrophasing.
  - d. fuel system—capacity; drains; pumps; controls; indicators; crossfeeding; transferring; jettison; fuel grade, color and additives; fueling and defueling procedures; and substitutions, if applicable.
  - e. oil system—capacity, grade, quantities, and indicators.
  - f. hydraulic system—capacity, pumps, pressure, reservoirs, grade, and regulators.
  - g. electrical system—alternators, generators, battery, circuit breakers and protection devices, controls, indicators, and external and auxiliary power sources and ratings.
  - h. environmental systems—heating, cooling, ventilation, oxygen and pressurization, controls, indicators, and regulating devices.
  - i. avionics and communications—autopilot; flight director; Electronic Flight Indicating Systems (EFIS); Flight Management System(s) (FMS); Long Range Navigation (LORAN) systems; Doppler Radar; Inertial Navigation Systems (INS); Global Positioning System (GPS/DGPS/WGPS); VOR, NDB, ILS/MLS, RNAV systems and components; indicating devices; transponder; and emergency locator transmitter.
  - j. ice protection—anti-ice, deice, pitot-static system protection, propeller, windshield, wing and tail surfaces.
  - k. crewmember and passenger equipment—oxygen system, survival gear, emergency exits, evacuation

procedures and crew duties, and quick donning oxygen mask for crewmembers and passengers.

- l. flight controls—ailerons, elevator(s), rudder(s), winglets, canards, control tabs, balance tabs, stabilizer, flaps, spoilers, leading edge flaps/slats and trim systems.
  - m. pitot-static system with associated instruments and the power source for the flight instruments.
2. Exhibits adequate knowledge of the contents of the POH or AFM with regard to the systems and components listed in paragraph 1 (above); the Minimum Equipment List (MEL), if appropriate; and the Operations Specifications, if applicable.

## **B. TASK: PERFORMANCE AND LIMITATIONS**

REFERENCES: Parts 1, 61, 91; AIM, POH, AFM.

**Objective.** To determine that the applicant:

1. Exhibits adequate knowledge of performance and limitations, including a thorough knowledge of the adverse effects of exceeding any limitation.
2. Demonstrates proficient use of (as appropriate to the airplane) performance charts, tables, graphs, or other data relating to items, such as—
  - a. accelerate-stop distance.
  - b. accelerate-go distance.
  - c. takeoff performance—all engines, engine(s) inoperative.
  - d. climb performance including segmented climb performance; with all engines operating—with one or more engine(s) inoperative, and with other engine malfunctions as may be appropriate.
  - e. service ceiling—all engines, engine(s) inoperative, including drift down, if appropriate.
  - f. cruise performance.
  - g. fuel consumption, range, and endurance.
  - h. descent performance.
  - i. land and hold short operations (LAHSO).
  - j. go-around from rejected landings.
  - k. other performance data (appropriate to the airplane).
3. Describes (as appropriate to the airplane) the airspeeds used during specific phases of flight.



4. Describes the effects of meteorological conditions upon performance characteristics and correctly applies these factors to a specific chart, table, graph, or other performance data.
5. Computes the center-of-gravity location for a specific load condition (as specified by the examiner), including adding, removing, or shifting weight.
6. Determines if the computed center-of-gravity is within the forward and aft center-of-gravity limits, and that lateral fuel balance is within limits for takeoff and landing.
7. Demonstrates good planning and knowledge of procedures in applying operational factors affecting airplane performance.



## **SECTION 2**

# **PREFLIGHT PROCEDURES, INFLIGHT MANEUVERS, AND POSTFLIGHT PROCEDURES**



# **SECTION 2 — PREFLIGHT PROCEDURES, INFLIGHT MANEUVERS, AND POSTFLIGHT PROCEDURES**

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## **II. AREA OF OPERATION: PREFLIGHT PROCEDURES**

### **A. TASK: PREFLIGHT INSPECTION**

REFERENCES: Parts 61, 91; POH, AFM.

**NOTE:** If a flight engineer (FE) is a required crewmember for a particular type airplane, the actual visual inspection may be waived. The actual visual inspection may be replaced by using an approved pictorial means that realistically portrays the location and detail of inspection items. On airplanes requiring an FE, an applicant must demonstrate adequate knowledge of the FE functions for the safe completion of the flight if the FE becomes ill or incapacitated during a flight.

**Objective.** To determine that the applicant:

1. Exhibits adequate knowledge of the preflight inspection procedures, while explaining briefly—
  - a. the purpose of inspecting the items, which must be checked.
  - b. how to detect possible defects.
  - c. the corrective action to take.
2. Exhibits adequate knowledge of the operational status of the airplane by locating and explaining the significance and importance of related documents, such as—
  - a. airworthiness and registration certificates.
  - b. operating limitations, handbooks, and manuals.
  - c. minimum equipment list (MEL) (if appropriate).
  - d. weight and balance data.
  - e. maintenance requirements, tests, and appropriate records applicable to the proposed flight or operation; and maintenance that may be performed by the pilot or other designated crewmember.
3. Uses the approved checklist to inspect the airplane externally and internally.
4. Uses the challenge-and-response (or other approved) method with the other crewmember(s), where applicable, to accomplish the checklist procedures.

5. Verifies the airplane is safe for flight by emphasizing (as appropriate) the need to look at and explain the purpose of inspecting items, such as—
  - a. powerplant, including controls and indicators.
  - b. fuel quantity, grade, type, contamination safeguards, and servicing procedures.
  - c. oil quantity, grade, and type.
  - d. hydraulic fluid quantity, grade, type, and servicing procedures.
  - e. oxygen quantity, pressures, servicing procedures, and associated systems and equipment for crew and passengers.
  - f. hull, landing gear, float devices, brakes, and steering system.
  - g. tires for condition, inflation, and correct mounting, where applicable.
  - h. fire protection/detection systems for proper operation, servicing, pressures, and discharge indications.
  - i. pneumatic system pressures and servicing.
  - j. ground environmental systems for proper servicing and operation.
  - k. auxiliary power unit (APU) for servicing and operation.
  - l. flight control systems including trim, spoilers, and leading/trailing edge.
  - m. anti-ice, deice systems, servicing, and operation.
6. Coordinates with ground crew and ensures adequate clearance prior to moving any devices, such as door, hatches, and flight control surfaces.
7. Complies with the provisions of the appropriate Operations Specifications, if applicable, as they pertain to the particular airplane and operation.
8. Demonstrates proper operation of all applicable airplane systems.
9. Notes any discrepancies, determines if the airplane is airworthy and safe for flight, or takes the proper corrective action.
10. Checks the general area around the airplane for hazards to the safety of the airplane and personnel.



## **B. TASK: POWERPLANT START**

REFERENCES: Part 61; POH, AFM.

**Objective.** To determine that the applicant:

1. Exhibits adequate knowledge of the correct powerplant start procedures including the use of an auxiliary power unit (APU) or external power source, starting under various atmospheric conditions, normal and abnormal starting limitations, and the proper action required in the event of a malfunction.
2. Ensures the ground safety procedures are followed during the before-start, start, and after-start phases.
3. Ensures the use of appropriate ground crew personnel during the start procedures.
4. Performs all items of the start procedures by systematically following the approved checklist items for the before-start, start, and after-start phases.
5. Demonstrates sound judgment and operating practices in those instances where specific instructions or checklist items are not published.

## **C. TASK: TAXIING**

REFERENCES: Part 61; POH, AFM.

**Objective.** To determine that the applicant:

1. Exhibits adequate knowledge of safe taxi procedures (as appropriate to the airplane including push-back or power-back, as may be applicable).
2. Demonstrates proficiency by maintaining correct and positive airplane control. In airplanes equipped with float devices, this includes water taxiing, sailing, step taxi, approaching a buoy, and docking.
3. Maintains proper spacing on other aircraft, obstructions, and persons.
4. Accomplishes the applicable checklist items and performs recommended procedures.
5. Maintains desired track and speed.
6. Complies with instructions issued by ATC (or the examiner simulating ATC).
7. Observes runway hold lines, localizer and glide slope critical areas, buoys, beacons, and other surface control markings and lighting.
8. Maintains constant vigilance and airplane control during taxi operation to prevent runway incursion.

## **D. TASK: PRETAKEOFF CHECKS**

REFERENCES: Part 61; POH, AFM.

**Objective.** To determine that the applicant:

1. Exhibits adequate knowledge of the pretakeoff checks by stating the reason for checking the items outlined on the approved checklist and explaining how to detect possible malfunctions.
2. Divides attention properly inside and outside cockpit.
3. Ensures that all systems are within their normal operating range prior to beginning, during the performance of, and at the completion of those checks required by the approved checklist.
4. Explains, as may be requested by the examiner, any normal or abnormal system operating characteristic or limitation; and the corrective action for a specific malfunction.
5. Determines if the airplane is safe for the proposed flight or requires maintenance.
6. Determines the airplane's takeoff performance, considering such factors as wind, density altitude, weight, temperature, pressure altitude, and runway condition and length.
7. Determines airspeeds/V-speeds and properly sets all instrument references, flight director and autopilot controls, and navigation and communications equipment.
8. Reviews procedures for emergency and abnormal situations, which may be encountered during takeoff, and states the corrective action required of the pilot in command and other concerned crewmembers.
9. Obtains and correctly interprets the takeoff and departure clearance as issued by ATC.

### **III. AREA OF OPERATION: TAKEOFF AND DEPARTURE PHASE**

#### **A. TASK: NORMAL AND CROSSWIND TAKEOFF**

REFERENCES: Part 61; POH, AFM.

**Objective.** To determine that the applicant:

1. Exhibits adequate knowledge of normal and crosswind takeoffs and climbs including (as appropriate to the airplane) airspeeds, configurations, and emergency/abnormal procedures.
2. Notes any surface conditions, obstructions, aircraft cleared for LAHSO, or other hazards that might hinder a safe takeoff.
3. Verifies and correctly applies correction for the existing wind component to the takeoff performance.
4. Completes required checks prior to starting takeoff to verify the expected powerplant performance. Performs all required pretakeoff checks as required by the appropriate checklist items.
5. Aligns the airplane on the runway centerline.
6. Applies the controls correctly to maintain longitudinal alignment on the centerline of the runway prior to initiating and during the takeoff.
7. Adjusts the powerplant controls as recommended by the FAA-approved guidance for the existing conditions.
8. Monitors powerplant controls, settings, and instruments during takeoff to ensure all predetermined parameters are maintained.
9. Adjusts the controls to attain the desired pitch attitude at the predetermined airspeed/V-speed to attain the desired performance for the particular takeoff segment.
10. Performs the required pitch changes and, as appropriate, performs or calls for and verifies the accomplishment of, gear and flap retractions, power adjustments, and other required pilot-related activities at the required airspeed/V-speeds within the tolerances established in the POH or AFM.
11. Uses the applicable noise abatement and wake turbulence avoidance procedures, as required.
12. Accomplishes or calls for and verifies the accomplishment of the appropriate checklist items.
13. Maintains the appropriate climb segment airspeed/V-speeds.

14. Maintains the desired heading within  $\pm 5^\circ$  and the desired airspeed/V-speed within  $\pm 5$  knots or the appropriate V-speed range.

## **B. TASK: INSTRUMENT TAKEOFF**

REFERENCES: Part 61; AC 61-27; POH, AFM, AIM.

**Objective.** To determine that the applicant:

1. Exhibits adequate knowledge of an instrument takeoff with instrument meteorological conditions simulated at or before reaching an altitude of 100 feet (30 meters) AGL. If accomplished in a flight simulator, visibility should be no greater than one-quarter (1/4) mile, or as specified by operator specifications.
2. Takes into account, prior to beginning the takeoff, operational factors which could affect the maneuver, such as Takeoff Warning Inhibit Systems or other airplane characteristics, runway length, surface conditions, wind, wake turbulence, obstructions, and other related factors that could adversely affect safety.
3. Accomplishes the appropriate checklist items to ensure that the airplane systems applicable to the instrument takeoff are operating properly.
4. Sets the applicable radios/flight instruments to the desired setting prior to initiating the takeoff.
5. Applies the controls correctly to maintain longitudinal alignment on the centerline of the runway prior to initiating and during the takeoff.
6. Transitions smoothly and accurately from visual meteorological conditions to actual or simulated instrument meteorological conditions.
7. Maintains the appropriate climb attitude.
8. Complies with the appropriate airspeeds/V-speeds and climb segment airspeeds.
9. Maintains desired heading within  $\pm 5^\circ$  and desired airspeeds within  $\pm 5$  knots.
10. Complies with ATC clearances and instructions issued by ATC (or the examiner simulating ATC).

### C. TASK: POWERPLANT FAILURE DURING TAKEOFF

**NOTE:** In a multiengine airplane with published  $V_1$ ,  $V_R$ , and/or  $V_2$  speeds, the failure of the most critical powerplant should be simulated at a point:

1. after  $V_1$  and prior to  $V_2$ , if in the opinion of the examiner, it is appropriate under the prevailing conditions; or
2. as close as possible after  $V_1$  when  $V_1$  and  $V_2$  or  $V_1$  and  $V_R$  are identical.

In a multiengine airplane for which no  $V_1$ ,  $V_R$ , or  $V_2$  speeds are published, the failure of the most critical powerplant should be simulated at a point after reaching a minimum of  $V_{SSE}$  and, if accomplished in the aircraft, at an altitude not lower than 500 feet AGL.

REFERENCES: Part 61; FAA-H-8083-3; AC 120-62; POH, AFM.

**Objective.** To determine that the applicant:

1. Exhibits adequate knowledge of the procedures used during powerplant failure on takeoff, the appropriate reference airspeeds, and the specific pilot actions required.
2. Takes into account, prior to beginning the takeoff, operational factors which could affect the maneuver such as Takeoff Warning Inhibit Systems or other airplane characteristics, runway length, surface conditions, wind, wake turbulence, obstructions, and other related factors that could adversely affect safety.
3. Completes required checks prior to starting takeoff to verify the expected powerplant performance. Performs all required pretakeoff checks as required by the appropriate checklist items.
4. Aligns the airplane on the runway.
5. Applies the controls correctly to maintain longitudinal alignment on the centerline of the runway prior to initiating and during the takeoff.
6. Adjusts the powerplant controls as recommended by the FAA-approved guidance for the existing conditions.
7. Single-Engine Airplanes: Establishes a power-off descent approximately straight-ahead, if the powerplant failure occurs after becoming airborne.

8. Continues the takeoff (in a multiengine airplane) if the (simulated) powerplant failure occurs at a point where the airplane can continue to a specified airspeed and altitude at the end of the runway commensurate with the airplane's performance capabilities and operating limitations.
9. Maintains (in a multiengine airplane), after a simulated powerplant failure and after a climb has been established, the desired heading within  $\pm 5^\circ$ , desired airspeed within  $\pm 5$  knots, and, if appropriate for the airplane, establishes a bank of approximately  $5^\circ$ , or as recommended by the manufacturer, toward the operating powerplant.
10. Maintains the airplane alignment with the heading appropriate for climb performance and terrain clearance when powerplant failure occurs.

#### **D. TASK: REJECTED TAKEOFF**

REFERENCES: Part 61; FAA-H-8083-3; AC 120-62; POH, AFM.

**Objective.** To determine that the applicant understands when to reject or continue the takeoff and:

1. Exhibits adequate knowledge of the technique and procedure for accomplishing a rejected takeoff after powerplant/system(s) failure/warnings, including related safety factors.
2. Takes into account, prior to beginning the takeoff, operational factors which could affect the maneuver, such as Takeoff Warning Inhibit Systems or other airplane characteristics, runway length, surface conditions, wind, obstructions, and aircraft cleared for LAHSO that could affect takeoff performance and could adversely affect safety.
3. Aligns the airplane on the runway centerline.
4. Performs all required pretakeoff checks as required by the appropriate checklist items.
5. Adjusts the powerplant controls as recommended by the FAA-approved guidance for the existing conditions.
6. Applies the controls correctly to maintain longitudinal alignment on the centerline of the runway.
7. Aborts the takeoff if, in a single-engine airplane the powerplant failure occurs prior to becoming airborne, or in a multiengine airplane, the powerplant failure occurs at a point during the takeoff where the abort procedure can be initiated and the airplane can be safely stopped on the remaining runway/stopway. If a flight simulator is not used, the powerplant failure should be simulated before reaching 50 percent of  $V_{MC}$ .

8. Reduces the power smoothly and promptly, if appropriate to the airplane, when powerplant failure is recognized.
9. Uses spoilers, prop reverse, thrust reverse, wheel brakes, and other drag/braking devices, as appropriate, maintaining positive control in such a manner as to bring the airplane to a safe stop. Accomplishes the appropriate powerplant failure or other procedures and/or checklists as set forth in the POH or AFM.

#### **E. TASK: DEPARTURE PROCEDURES**

REFERENCES: Part 61; AC 61-27; POH, AFM, AIM.

**Objective.** To determine that the applicant:

1. In actual or simulated instrument conditions, exhibits adequate knowledge of DP's, En Route Low and High Altitude Charts, STARs, FMSP, and related pilot/controller responsibilities.
2. Uses the current and appropriate navigation publications for the proposed flight.
3. Selects and uses the appropriate communications frequencies, and selects and identifies the navigation aids associated with the proposed flight.
4. Performs the appropriate checklist items.
5. Establishes communications with ATC, using proper phraseology.
6. Complies, in a timely manner, with all instructions and airspace restrictions.
7. Exhibits adequate knowledge of two-way radio communications failure procedures.
8. Intercepts, in a timely manner, all courses, radials, and bearings appropriate to the procedure, route, clearance, or as directed by the examiner.
9. Maintains the appropriate airspeed within  $\pm 10$  knots, headings within  $\pm 10^\circ$ , altitude within  $\pm 100$  feet (30 meters); and accurately tracks a course, radial, or bearing.
10. Conducts the departure phase to a point where, in the opinion of the examiner, the transition to the en route environment is complete.

## **IV. AREA OF OPERATION: INFLIGHT MANEUVERS**

### **A. TASK: STEEP TURNS**

REFERENCES: Part 61; AC 61-27; FSB Report; POH, AFM.

**Objective.** To determine that the applicant:

1. In actual or simulated instrument conditions, exhibits adequate knowledge of steep turns (if applicable to the airplane) and the factors associated with performance; and, if applicable, wing loading, angle of bank, stall speed, pitch, power requirements, and over-banking tendencies.
2. Selects an altitude recommended by the manufacturer, training syllabus, or other training directive, but in no case lower than 3,000 feet (900 meters) AGL.
3. Establishes the recommended entry airspeed.
4. Rolls into a coordinated turn of 180° or 360° with a bank of at least 45°. Maintains the bank angle within  $\pm 5^\circ$  while in smooth, stabilized flight.
5. Applies smooth coordinated pitch, bank, and power to maintain the specified altitude within  $\pm 100$  feet (30 meters) and the desired airspeed within  $\pm 10$  knots.
6. Rolls out of the turn (at approximately the same rate as used to roll into the turn) within  $\pm 10^\circ$  of the entry or specified heading, stabilizes the airplane in a straight-and-level attitude or, at the discretion of the examiner, reverses the direction of turn and repeats the maneuver in the opposite direction.
7. Avoids any indication of an approaching stall, abnormal flight attitude, or exceeding any structural or operating limitation during any part of the maneuver.

### **B. TASK: APPROACHES TO STALLS**

REFERENCES: Part 61; FAA-H-8083-3; FSB Report; POH, AFM.

THREE approaches to stall are required, as follows (unless otherwise specified by the FSB Report):

1. One in the takeoff configuration (except where the airplane uses only zero-flap takeoff configuration) or approach configuration.
2. One in a clean configuration.
3. One in a landing configuration.

One of these approaches to a stall must be accomplished while in a turn using a bank angle of 15 to 30°.



**Objective.** To determine that the applicant:

1. In actual or simulated instrument conditions exhibits adequate knowledge of the factors, which influence stall characteristics, including the use of various drag configurations, power settings, pitch attitudes, weights, and bank angles. Also, exhibits adequate knowledge of the proper procedure for resuming normal flight.
2. Selects an entry altitude that is in accordance with the AFM or POH, but in no case lower than an altitude that will allow recovery to be safely completed at a minimum of 3,000 feet (900 meters) AGL. When accomplished in an FTD or flight simulator, the entry altitude may be at low, intermediate, or high altitude as appropriate for the airplane and the configuration, at the discretion of the examiner.
3. Observes the area is clear of other aircraft prior to accomplishing an approach to a stall.
4. While maintaining altitude, slowly establishes the pitch attitude (using trim or elevator/stabilizer), bank angle, and power setting that will induce stall at the desired target airspeed.
5. Announces the first indication of an impending stall (such as buffeting, stick shaker, decay of control effectiveness, and any other cues related to the specific airplane design characteristics) and initiates recovery or as directed by the examiner (using maximum power or as directed by the examiner).
6. Recovers to a reference airspeed, altitude and heading, allowing only the acceptable altitude or airspeed loss, and heading deviation.
7. Demonstrates smooth, positive control during entry, approach to a stall, and recovery.

### **C. TASK: POWERPLANT FAILURE—MULTIENGINE AIRPLANE**

REFERENCES: Part 61; POH, AFM.

**NOTE:** When not in an FTD or a flight simulator, the feathering of one propeller must be demonstrated in any multiengine airplane equipped with propellers (includes turboprop), which can be safely feathered and unfeathered while airborne. In a multiengine jet airplane, one engine must be shut down and a restart must be demonstrated while airborne. Feathering or shutdown should be performed only under conditions, and at such altitudes (no lower than 3,000 feet [900 meters] AGL) and in a position where a safe landing can be made on an established airport in the event difficulty is encountered in unfeathering the propeller or restarting the engine. At an altitude lower than 3,000 feet (900 meters) AGL, simulated engine failure will be performed by setting the powerplant controls to simulate zero-thrust. In the event propeller cannot be unfeathered or engine air started during the test, it should be treated as an emergency. When authorized and conducted in a flight simulator, feathering or shutdown may be performed in conjunction with any procedure or maneuver and at locations and altitudes at the discretion of the examiner. However, when conducted in an FTD, authorizations shall be limited to shutdown, feathering, restart, and/or unfeathering procedures only. See appendix 1.

**Objective.** To determine that the applicant:

1. Exhibits adequate knowledge of the flight characteristics and controllability associated with maneuvering with powerplant(s) inoperative (as appropriate to the airplane).
2. Maintains positive airplane control. Establishes a bank of approximately 5°, if required, or as recommended by the manufacturer, to maintain coordinated flight, and properly trims for that condition.
3. Sets powerplant controls, reduces drag as necessary, correctly identifies and verifies the inoperative powerplant(s) after the failure (or simulated failure).
4. Maintains the operating powerplant(s) within acceptable operating limits.
5. Follows the prescribed airplane checklist, and verifies the procedures for securing the inoperative powerplant(s).
6. Determines the cause for the powerplant(s) failure and if a restart is a viable option.
7. Maintains desired altitude within  $\pm 100$  feet (30 meters), when a constant altitude is specified and is within the capability of the airplane.

8. Maintains the desired airspeed within  $\pm 10$  knots.
9. Maintains the desired heading within  $\pm 10^\circ$  of the specified heading.
10. Demonstrates proper powerplant restart procedures (if appropriate) in accordance with FAA-approved procedure/checklist or the manufacturer's recommended procedures and pertinent checklist items.

**D. TASK: POWERPLANT FAILURE—SINGLE-ENGINE AIRPLANE**

REFERENCES: Part 61; FAA-H-8083-3; POH, AFM.

**NOTE:** No simulated powerplant failure shall be given by the examiner in an airplane when an actual touchdown could not be safely completed should it become necessary.

**Objective.** To determine that the applicant:

1. Exhibits adequate knowledge of the flight characteristics, approach and forced (emergency) landing procedures, and related procedures to use in the event of a powerplant failure (as appropriate to the airplane).
2. Maintains positive control throughout the maneuver.
3. Establishes and maintains the recommended best glide airspeed,  $\pm 5$  knots, and configuration during a simulated powerplant failure.
4. Selects a suitable airport or landing area, which is within the performance capability of the airplane.
5. Establishes a proper flight pattern to the selected airport or landing area, taking into account altitude, wind, terrain, obstructions, and other pertinent operational factors.
6. Follows the emergency checklist items appropriate to the airplane.
7. Determines the cause for the simulated powerplant failure (if altitude permits) and if a restart is a viable option.
8. Uses configuration devices, such as landing gear and flaps in a manner recommended by the manufacturer and/or approved by the FAA.

## **E. TASK: SPECIFIC FLIGHT CHARACTERISTICS**

REFERENCES: Part 61; FSB Report; POH, AFM.

**Objective.** To determine that the applicant:

1. Exhibits adequate knowledge of specific flight characteristics appropriate to the specific airplane, as identified by the FSB Report, such as Dutch Rolls in a Boeing 727 or Lear Jet.
2. Uses proper technique to enter into, operate within, and recover from specific flight situations.

## **F. TASK: RECOVERY FROM UNUSUAL ATTITUDES**

REFERENCES: Part 61; AC 61-27; POH, AFM.

**Objective.** To determine that the applicant:

1. Exhibits adequate knowledge of recovery from unusual attitudes.
2. Recovers from nose-high unusual attitudes, using proper pitch, bank, and power techniques.
3. Recovers from nose-low unusual attitudes, using proper pitch, bank, and power techniques.

## **V. AREA OF OPERATION: INSTRUMENT PROCEDURES**

**NOTE:** TASKS B through F are not required if the applicant holds a private pilot or commercial pilot certificate and is seeking a type rating limited to VFR.

### **A. TASK: STANDARD TERMINAL ARRIVAL/FLIGHT MANAGEMENT SYSTEM PROCEDURES**

**REFERENCES:** Part 61; POH, AFM, AIM; En Route Low and High Altitude Charts, Profile Descent Charts, STAR's/FMSP's, Instrument Approach Procedure Charts.

**Objective.** To determine that the applicant:

1. In actual or simulated instrument conditions, exhibits adequate knowledge of En Route Low and High Altitude Charts, STAR's/FMSP's, Instrument Approach Procedure Charts, and related pilot and controller responsibilities.
2. Uses the current and appropriate navigation publications for the proposed flight.
3. Selects and correctly identifies all instrument references, flight director and autopilot controls, and navigation and communications equipment associated with the arrival.
4. Performs the airplane checklist items appropriate to the arrival.
5. Establishes communications with ATC, using proper phraseology.
6. Complies, in a timely manner, with all ATC clearances, instructions, and restrictions.
7. Exhibits adequate knowledge of two-way communications failure procedures.
8. Intercepts, in a timely manner, all courses, radials, and bearings appropriate to the procedure, route, ATC clearance, or as directed by the examiner.
9. Adheres to airspeed restrictions and adjustments required by regulations, ATC, the POH, the AFM, or the examiner.
10. Establishes, where appropriate, a rate of descent consistent with the airplane operating characteristics and safety.
11. Maintains the appropriate airspeed/V-speed within  $\pm 10$  knots, but not less than  $V_{REF}$ , if applicable; heading  $\pm 10^\circ$ ; altitude within  $\pm 100$  feet (30 meters); and accurately tracks radials, courses, and bearings.
12. Complies with the provisions of the Profile Descent, STAR, and other arrival procedures, as appropriate.

## **B. TASK: HOLDING**

REFERENCES: Part 61; POH, AFM, AIM; En Route Low and High Altitude Charts, STARs, FMSP, Instrument Approach Procedure Charts.

**Objective.** To determine that the applicant:

1. In actual or simulated instrument conditions, exhibits adequate knowledge of holding procedures for standard and non-standard, published and non-published holding patterns. If appropriate, demonstrates adequate knowledge of holding endurance, including, but not necessarily limited to, fuel on board, fuel flow while holding, fuel required to alternate, etc.
2. Changes to the recommended holding airspeed appropriate for the airplane and holding altitude, so as to cross the holding fix at or below maximum holding airspeed.
3. Recognizes arrival at the clearance limit or holding fix.
4. Follows appropriate entry procedures for a standard, non-standard, published, or non-published holding pattern.
5. Complies with ATC reporting requirements.
6. Uses the proper timing criteria required by the holding altitude and ATC or examiner's instructions.
7. Complies with the holding pattern leg length when a DME distance is specified.
8. Uses the proper wind-drift correction techniques to accurately maintain the desired radial, track, courses, or bearing.
9. Arrives over the holding fix as close as possible to the "expect further clearance" time.
10. Maintains the appropriate airspeed/V-speed within  $\pm 10$  knots, altitude within  $\pm 100$  feet (30 meters), headings within  $\pm 10^\circ$ ; and accurately tracks radials, courses, and bearings.

## C. TASK: PRECISION INSTRUMENT APPROACHES

REFERENCES: Part 61; AC 61-27; POH, AFM, AIM; Instrument Approach Procedure Charts.

**NOTE:** Two precision approaches, utilizing airplane NAVAID equipment for centerline and glideslope guidance, must be accomplished in simulated or actual instrument conditions to DA/DH. At least one approach must be flown manually. The second approach may be flown via the autopilot, if appropriate, and if the DA/DH altitude does not violate the authorized minimum altitude for autopilot operation. Manually flown precision approaches may use raw data displays or may be flight director assisted, at the discretion of the examiner.

For multiengine airplanes at least one manually controlled precision approach must be accomplished with a simulated failure of one powerplant. The simulated powerplant failure should occur before initiating the final approach segment and must continue to touchdown or throughout the missed approach procedure. As the markings on localizer/glide slope indicators vary, a one-quarter scale deflection of either the localizer, or glide slope indicator is when it is displaced one-fourth of the distance that it may be deflected from the on glide slope or on localizer position.

**Objective.** To determine that the applicant:

1. Exhibits adequate knowledge of the precision instrument approach procedures with all engines operating, and with one engine inoperative.
2. Accomplishes the appropriate precision instrument approaches as selected by the examiner.
3. Establishes two-way communications with ATC using the proper communications phraseology and techniques, either personally, or, if appropriate, directs co-pilot/safety pilot to do so, as required for the phase of flight or approach segment.
4. Complies, in a timely manner, with all clearances, instructions, and procedures.
5. Advises ATC anytime the applicant is unable to comply with a clearance.
6. Establishes the appropriate airplane configuration and airspeed/V-speed considering turbulence, wind shear, microburst conditions, or other meteorological and operating conditions.

## Change 1 (02/07/01)

7. Completes the airplane checklist items appropriate to the phase of flight or approach segment, including engine out approach and landing checklists, if appropriate.
8. Prior to beginning the final approach segment, maintains the desired altitude  $\pm 100$  feet (30 meters), the desired airspeed within  $\pm 10$  knots, the desired heading within  $\pm 5^\circ$ ; and accurately tracks radials, courses, and bearings.
9. Selects, tunes, identifies, and monitors the operational status of ground and airplane navigation equipment used for the approach.
10. Applies the necessary adjustments to the published DA/DH and visibility criteria for the airplane approach category as required, such as—
  - a. Notices to Airmen, including Flight Data Center Procedural NOTAMs.
  - b. Inoperative airplane and ground navigation equipment.
  - c. Inoperative visual aids associated with the landing environment.
  - d. National Weather Service (NWS) reporting factors and criteria.
11. Establishes a predetermined rate of descent at the point where the electronic glide slope begins, which approximates that required for the airplane to follow the glide slope.
12. Maintains a stabilized final approach, from the Final Approach Fix to Decision Height allowing no more than one-quarter scale deflection of either the glide slope or localizer indications and maintains the desired airspeed within  $\pm 5$  knots.
13. A missed approach or transition to a landing shall be initiated at Decision Height.
14. Initiates immediately the missed approach when at the DA/DH, and the required visual references for the runway are not unmistakably visible and identifiable.
15. Transitions to a normal landing approach (missed approach for seaplanes) only when the airplane is in a position from which a descent to a landing on the runway can be made at a normal rate of descent using normal maneuvering.
16. Maintains localizer and glide slope within one-quarter scale deflection of the indicators during the visual descent from DA/DH to a point over the runway where glide slope must be abandoned to accomplish a normal landing.



## **D. TASK: NONPRECISION INSTRUMENT APPROACHES**

REFERENCES: Part 61; AC 61-27; POH, AFM, AIM; Instrument Approach Procedure Charts.

**NOTE:** The applicant must accomplish at least two nonprecision approaches (one of which must include a procedure turn) in simulated or actual weather conditions, using two different approach systems. At least one nonprecision approach must be flown manually without receiving radar vectors. The examiner will select nonprecision approaches that are representative of that which the applicant is likely to use. The choices must utilize two different systems; i.e., NDB and one of the following: VOR, LOC, LDA, GPS, or LORAN.

**Objective.** To determine that the applicant:

1. Exhibits adequate knowledge of nonprecision approach procedures representative of those the applicant is likely to use.
2. Accomplishes the nonprecision instrument approaches selected by the examiner.
3. Establishes two-way communications with ATC as appropriate to the phase of flight or approach segment and uses proper communications phraseology and techniques.
4. Complies with all clearances issued by ATC.
5. Advises ATC or the examiner any time the applicant is unable to comply with a clearance.
6. Establishes the appropriate airplane configuration and airspeed, and completes all applicable checklist items.
7. Maintains, prior to beginning the final approach segment, the desired altitude  $\pm 100$  feet (30 meters), the desired airspeed  $\pm 10$  knots, the desired heading  $\pm 5^\circ$ ; and accurately tracks radials, courses, and bearings.
8. Selects, tunes, identifies, and monitors the operational status of ground and airplane navigation equipment used for the approach.
9. Applies the necessary adjustments to the published Minimum Descent Altitude (MDA) and visibility criteria for the airplane approach category when required, such as—
  - a. Notices to Airmen, including Flight Data Center Procedural NOTAMs.
  - b. Inoperative airplane and ground navigation equipment.

- c. Inoperative visual aids associated with the landing environment.
  - d. National Weather Service (NWS) reporting factors and criteria.
10. Establishes a rate of descent that will ensure arrival at the MDA (at, or prior to reaching, the visual descent point (VDP), if published) with the airplane in a position from which a descent from MDA to a landing on the intended runway can be made at a normal rate using normal maneuvering.
  11. Allows, while on the final approach segment, not more than quarter-scale deflection of the Course Deviation Indicator (CDI) or  $\pm 5^\circ$  in the case of the RMI or bearing pointer, and maintains airspeed within  $\pm 5$  knots of that desired.
  12. Maintains the MDA, when reached, within -0, +50 feet (-0, +15 meters) to the missed approach point.
  13. Executes the missed approach if the required visual references for the intended runway are not unmistakably visible and identifiable at the missed approach point.
  14. Executes a normal landing from a straight-in or circling approach when instructed by the examiner.

**NOTE:** If TASK D, Nonprecision Instrument Approaches, the second approach may be waived, if the applicant demonstrates a high degree of proficiency on the first approach and the applicant's training records or instructor certification show that the applicant has satisfactorily completed the nonprecision approach training requirements. The instrument approaches are considered to begin when the airplane is over the initial approach fix for the procedure being used and end when the airplane touches down on the runway or when transition to a missed approach configuration is completed. Instrument conditions need NOT be simulated below the minimum altitude for the approach being accomplished.

**E. TASK: CIRCLING APPROACH**

REFERENCES: Part 61; AC 61-27; POH, AFM, AIM; Instrument Approach Procedure Charts.

**NOTE:** ~~Refer to the note on page 2 of the Introduction.~~ (NOTE Deleted)

**Objective.** To determine that the applicant:

1. Exhibits adequate knowledge of circling approach categories, speeds, and procedures to a specified runway.
2. In simulated or actual instrument conditions to MDA, accomplishes the circling approach selected by the examiner.
3. Demonstrates sound judgment and knowledge of the airplane maneuvering capabilities throughout the circling approach.
4. Confirms the direction of traffic and adheres to all restrictions and instructions issued by ATC.
5. Descends at a rate that ensures arrival at the MDA at, or prior to, a point from which a normal circle-to-land maneuver can be accomplished.
6. Avoids descent below the appropriate circling MDA or exceeding the visibility criteria until in a position from which a descent to a normal landing can be made.
7. Maneuvers the airplane, after reaching the authorized circling approach altitude, by visual references to maintain a flightpath that permits a normal landing on a runway at least 90° from the final approach course.
8. Performs the procedure without excessive maneuvering and without exceeding the normal operating limits of the airplane (the angle of bank should not exceed 30°).
9. Maintains the desired altitude within -0, +100 feet (-0, +30 meters), heading/track within  $\pm 5^\circ$ , the airspeed/V-speed within  $\pm 5$  knots, but not less than the airspeed as specified in the POH or the AFM.
10. Uses the appropriate airplane configuration for normal and abnormal situations and procedures.
11. Turns in the appropriate direction, when a missed approach is dictated during the circling approach, and uses the correct procedure and airplane configuration.
12. Performs all procedures required for the circling approach and airplane control in a smooth, positive, and timely manner.

## **F. TASK: MISSED APPROACH**

REFERENCES: Part 61; AC 61-27; POH, AFM, AIM; Instrument Approach Procedure Charts.

**NOTE:** The applicant must perform two missed approaches with one being from a precision approach (ILS, MLS, or GPS). One complete published missed approach must be accomplished. Additionally, in multiengine airplanes, a missed approach must be accomplished with one engine inoperative (or simulated inoperative). The engine failure may be experienced anytime prior to the initiation of the approach, during the approach, or during the transition to the missed approach attitude and configuration.

Going below the MDA or DA/DH, as appropriate, prior to the initiation of the missed approach shall be considered unsatisfactory performance. However, satisfactory performance may be concluded if the missed approach is properly initiated at DA/DH and the airplane descends below DA/DH only because of the momentum of the airplane transitioning from a stabilized approach to a missed approach.

**Objective.** To determine that the applicant:

1. Exhibits adequate knowledge of missed approach procedures associated with standard instrument approaches.
2. Initiates the missed approach procedure promptly by the timely application of power, establishes the proper climb attitude, and reduces drag in accordance with the approved procedures.
3. Reports to ATC, beginning the missed approach procedure.
4. Complies with the appropriate missed approach procedure or ATC clearance.
5. Advises ATC any time the applicant is unable to maneuver the airplane to comply with a clearance.
6. Follows the recommended airplane checklist items appropriate to the go-around procedure for the airplane used.
7. Requests clearance, if appropriate, to the alternate airport, another approach, a holding fix, or as directed by the examiner.
8. Maintains the desired altitudes  $\pm 100$  feet (30 meters), airspeed  $\pm 5$  knots, heading  $\pm 5^\circ$ ; and accurately tracks courses, radials, and bearings.

## **VI. AREA OF OPERATION: LANDINGS AND APPROACHES TO LANDINGS**

**NOTE:** Notwithstanding the authorizations for the combining of maneuvers and for the waiver of maneuvers, the applicant must make at least three actual landings (one to a full stop). These landings must include the types listed in this AREA OF OPERATION; however, more than one type may be combined where appropriate (i.e., crosswind and landing from a precision approach or landing with simulated powerplant failure, etc.). For all landings, touchdown should be 500 to 3,000 feet (150 to 900 meters) past the runway threshold, not to exceed one-third of the runway length, with the runway centerline between the main gear. An amphibian type rating shall bear the limitation "LIMITED TO LAND" or "LIMITED TO SEA," as appropriate, unless the applicant demonstrates proficiency in both land and sea operations.

### **A. TASK: NORMAL AND CROSSWIND APPROACHES AND LANDINGS**

**REFERENCES:** Part 61; FAA-H-8083-3; POH, AFM.

**NOTE:** In an airplane with a single powerplant, unless the applicant holds a commercial pilot certificate, he or she must accomplish three accuracy approaches and spot landings from an altitude of 1,000 feet (300 meters) or less, with the engine power lever in idle and 180° of change in direction. The airplane must touch the ground in a normal landing attitude beyond and within 200 feet (60 meters) of a designated line or point on the runway. At least one landing must be from a forward slip. Although circular approaches are acceptable, 180° approaches using two 90° turns with a straight base leg are preferred.

**Objective.** To determine that the applicant:

1. Exhibits adequate knowledge of normal and crosswind approaches and landings including recommended approach angles, airspeeds, V-speeds, configurations, performance limitations, wake turbulence, LAHSO, and safety factors (as appropriate to the airplane).
2. Establishes the approach and landing configuration appropriate for the runway and meteorological conditions, and adjusts the powerplant controls as required.
3. Maintains a ground track that ensures the desired traffic pattern will be flown, taking into account any obstructions and ATC or examiner instructions.
4. Verifies existing wind conditions, makes proper correction for drift, and maintains a precise ground track.

5. Maintains a stabilized approach and the desired airspeed/V-speed within  $\pm 5$  knots.
6. Accomplishes a smooth, positively controlled transition from final approach to touchdown.
7. Maintains positive directional control and crosswind correction during the after-landing roll.
8. Uses spoilers, prop reverse, thrust reverse, wheel brakes, and other drag/braking devices, as appropriate, in such a manner to bring the airplane to a safe stop.
9. Completes the applicable after-landing checklist items in a timely manner and as recommended by the manufacturer.

## **B. TASK: LANDING FROM A PRECISION APPROACH**

REFERENCES: Part 61; AC 61-27; POH, AFM, AIM.

**NOTE:** If circumstances beyond the control of the applicant prevent an actual landing, the examiner may accept an approach to a point where, in his or her judgment, a safe landing and a full stop could have been made, and credit given for a missed approach. Where a simulator, approved for landing from a precision approach, is used, the approach may be continued through the landing and credit given for one of the landings required by this AREA OF OPERATION.

**Objective.** To determine that the applicant:

1. Exhibits awareness of landing in sequence from a precision approach.
2. Considers factors to be applied to the approach and landing such as displaced thresholds, meteorological conditions, NOTAMs, and ATC or examiner instructions.
3. Uses the airplane configuration and airspeed/V-speeds, as appropriate.
4. Maintains, during the final approach segment, glide slope and localizer indications within applicable standards of deviation, and the recommended airspeed/V-speed  $\pm 5$  knots.
5. Applies gust/wind factors as recommended by the manufacturer, and takes into account meteorological phenomena such as wind shear, microburst, and other related safety of flight factors.
6. Accomplishes the appropriate checklist items.
7. Transitions smoothly from simulated instrument meteorological conditions at a point designated by the examiner, maintaining positive airplane control.
8. Accomplishes a smooth, positively controlled transition from final approach to touchdown.

9. Maintains positive directional control and crosswind correction during the after-landing roll.
10. Uses spoilers, prop reverse, thrust reverse, wheel brakes, and other drag/braking devices, as appropriate, in such a manner to bring the airplane to a safe stop after landing.
11. Completes the applicable after-landing checklist items in a timely manner and as recommended by the manufacturer.

**C. TASK: APPROACH AND LANDING WITH (SIMULATED) POWERPLANT FAILURE—MULTIENGINE AIRPLANE**

REFERENCES: Part 61; FAA-H-8083-3; POH, AFM.

**NOTE:** In airplanes with three powerplants, the applicant shall follow a procedure (if approved) that approximates the loss of two powerplants, the center and one outboard powerplant. In other multiengine airplanes, the applicant shall follow a procedure, which simulates the loss of 50 percent of available powerplants, the loss being simulated on one side of the airplane.

**Objective.** To determine that the applicant:

1. Exhibits adequate knowledge of the flight characteristics and controllability associated with maneuvering to a landing with (a) powerplant(s) inoperative (or simulated inoperative) including the controllability factors associated with maneuvering, and the applicable emergency procedures.
2. Maintains positive airplane control. Establishes a bank of approximately 5°, if required, or as recommended by the manufacturer, to maintain coordinated flight, and properly trims for that condition.
3. Sets powerplant controls, reduces drag as necessary, correctly identifies and verifies the inoperative powerplant(s) after the failure (or simulated failure).
4. Maintains the operating powerplant(s) within acceptable operating limits.
5. Follows the prescribed airplane checklist, and verifies the procedures for securing the inoperative powerplant(s).
6. Proceeds toward the nearest suitable airport.
7. Maintains, prior to beginning the final approach segment, the desired altitude  $\pm 100$  feet (30 meters), the desired airspeed  $\pm 10$  knots, the desired heading  $\pm 5^\circ$ ; and accurately tracks courses, radials, and bearings.

8. Establishes the approach and landing configuration appropriate for the runway or landing area, and meteorological conditions; and adjusts the powerplant controls as required.
9. Maintains a stabilized approach and the desired airspeed/V-speed within  $\pm 5$  knots.
10. Accomplishes a smooth, positively-controlled transition from final approach to touchdown.
11. Maintains positive directional control and crosswind corrections during the after-landing roll.
12. Uses spoilers, prop reverse, thrust reversers, wheel brakes, and other drag/braking devices, as appropriate, in such a manner to bring the airplane to a safe stop after landing.
13. Completes the applicable after-landing checklist items in a timely manner, after clearing the runway, and as recommended by the manufacturer.

#### **D. TASK: LANDING FROM A CIRCLING APPROACH**

REFERENCES: Part 61; AC 61-27; POH, AFM, AIM.

**Objective.** To determine that the applicant:

1. Exhibits adequate knowledge of a landing from a circling approach.
2. Selects, and complies with, a circling approach procedure to a specified runway.
3. Considers the environmental, operational, and meteorological factors which affect a landing from a circling approach.
4. Confirms the direction of traffic and adheres to all restrictions and instructions issued by ATC.
5. Descends at a rate that ensures arrival at the MDA at, or prior to, a point from which a normal circle-to-land maneuver can be accomplished.
6. Avoids descent below the appropriate circling MDA or exceeding the visibility criteria until in a position from which a descent to a normal landing can be made.
7. Accomplishes the appropriate checklist items.
8. Maneuvers the airplane, after reaching the authorized circling approach altitude, by visual references, to maintain a flightpath that permits a normal landing on a runway at least  $90^\circ$  from the final approach course.
9. Performs the maneuver without excessive maneuvering and without exceeding the normal operating limits of the airplane. The angle of bank should not exceed  $30^\circ$ .



10. Maintains the desired altitude within +100, -0 feet (+30, -0 meters), heading within  $\pm 5^\circ$ , and approach airspeed/V-speed within  $\pm 5$  knots.
11. Uses the appropriate airplane configuration for normal and abnormal situations and procedures.
12. Performs all procedures required for the circling approach and airplane control in a timely, smooth, and positive manner.
13. Accomplishes a smooth, positively controlled transition to final approach and touchdown or to a point where in the opinion of the examiner that a safe full stop landing could be made.
14. Maintains positive directional control and crosswind correction during the after-landing roll.
15. Uses spoilers, prop reverse, thrust reverse, wheel brakes, and other drag/braking devices, as appropriate, in such a manner to bring the airplane to a safe stop.
16. Completes the appropriate after-landing checklist items, after clearing the runway, in a timely manner and as recommended by the manufacturer.

#### **E. TASK: REJECTED LANDING**

REFERENCES: Part 61; FAA-H-8083-3; AIM, POH, AFM; FSB Report.

**NOTE:** The maneuver may be combined with instrument, circling, or missed approach procedures, but instrument conditions need not be simulated below 100 feet (30 meters) above the runway. This maneuver should be initiated approximately 50 feet (15 meters) above the runway and approximately over the runway threshold or as recommended by the FSB Report.

For those applicants seeking a VFR only type rating in an airplane not capable of instrument flight, and where this maneuver is accomplished with a simulated engine failure, it should not be initiated at speeds or altitudes below that recommended in the POH.

**Objective.** To determine that the applicant:

1. Exhibits adequate knowledge of a rejected landing procedure including the conditions that dictate a rejected landing, the importance of a timely decision, LAHSO considerations, the recommended airspeed/V-speeds, and also the applicable "clean-up" procedure.
2. Makes a timely decision to reject the landing for actual or simulated circumstances and makes appropriate notification when safety-of-flight is not an issue.

3. Applies the appropriate power setting for the flight condition and establishes a pitch attitude necessary to obtain the desired performance.
4. Retracts the wing flaps/drag devices and landing gear, if appropriate, in the correct sequence and at a safe altitude, establishes a positive rate of climb and the appropriate airspeed/V-speed within  $\pm 5$  knots.
5. Trims the airplane as necessary, and maintains the proper ground track during the rejected landing procedure.
6. Accomplishes the appropriate checklist items in a timely manner in accordance with approved procedures.

#### **F. TASK: LANDING FROM A NO FLAP OR A NONSTANDARD FLAP APPROACH**

REFERENCES: Part 61; FAA-H-8083-3; FSB Report; POH, AFM.

**NOTE:** This maneuver need not be accomplished for a particular airplane type if the Administrator has determined that the probability of flap extension failure on that type airplane is extremely remote due to system design. The examiner must determine whether checking on slats only and partial-flap approaches are necessary for the practical test.

**Objective.** To determine that the applicant:

1. Exhibits adequate knowledge of the factors, which affect the flight characteristics of an airplane when full or partial flaps, leading edge flaps, and other similar devices become inoperative.
2. Uses the correct airspeeds/V-speeds for the approach and landing.
3. Maintains the proper airplane pitch attitude and flightpath for the configuration, gross weight, surface winds, and other applicable operational considerations.
4. Uses runway of sufficient length for the zero or nonstandard flap condition.
5. Maneuvers the airplane to a point where a touchdown at an acceptable point on the runway and a safe landing to a full stop could be made.
6. After landing, uses spoilers, prop reverse, thrust reverse, wheel brakes, and other drag/braking devices, as appropriate, in such a manner to bring the airplane to a safe stop.

## **VII. AREA OF OPERATION: NORMAL AND ABNORMAL PROCEDURES**

REFERENCES: Part 61; POH, AFM.

**Objective.** To determine that the applicant:

1. Possesses adequate knowledge of the normal and abnormal procedures of the systems, subsystems, and devices relative to the airplane type (as may be determined by the examiner); knows immediate action items to accomplish, if appropriate, and proper checklist to accomplish or to call for, if appropriate.
2. Demonstrates the proper use of the airplane systems, subsystems, and devices (as may be determined by the examiner) appropriate to the airplane, such as—
  - a. powerplant.
  - b. fuel system.
  - c. electrical system.
  - d. hydraulic system.
  - e. environmental and pressurization systems.
  - f. fire detection and extinguishing systems.
  - g. navigation and avionics systems.
  - h. automatic flight control system, electronic flight instrument system, and related subsystems.
  - i. flight control systems.
  - j. anti-ice and deice systems.
  - k. airplane and personal emergency equipment, other systems, subsystems, and devices specific to the type airplane, including make, model, and series.

## **VIII. AREA OF OPERATION: EMERGENCY PROCEDURES**

REFERENCES: Part 61; POH, AFM.

**Objective.** To determine that the applicant:

1. Possesses adequate knowledge of the emergency procedures (as may be determined by the examiner) relating to the particular airplane type.
2. Demonstrates the proper emergency procedures (as must be determined by the examiner) relating to the particular airplane type, including—
  - a. emergency descent (maximum rate).
  - b. inflight fire and smoke removal.
  - c. rapid decompression.
  - d. emergency evacuation.
  - e. others (as may be required by the AFM).
3. Demonstrates the proper procedure for any other emergency outlined (as must be determined by the examiner) in the appropriate approved AFM.

## **IX. AREA OF OPERATION: POSTFLIGHT PROCEDURES**

### **A. TASK: AFTER-LANDING PROCEDURES**

REFERENCES: POH, AFM.

**Objective.** To determine that the applicant:

1. Exhibits adequate knowledge of safe after-landing/taxi/ramping/anchoring/docking and mooring procedures as appropriate.
2. Demonstrates proficiency by maintaining correct and positive control. In airplanes equipped with float devices, this includes water taxiing, approaching a buoy, sailing, and docking.
3. Maintains proper spacing on other aircraft, obstructions, and persons.
4. Accomplishes the applicable checklist items and performs the recommended procedures.
5. Maintains the desired track and speed.
6. Complies with instructions issued by ATC (or the examiner simulating ATC).
7. Observes runway hold lines, localizer and glide slope critical areas, and other surface control markings and lighting to prevent a runway incursion.
8. Maintains constant vigilance and airplane control during the taxi operation.

### **B. TASK: PARKING AND SECURING**

REFERENCES: POH, AFM.

**Objective.** To determine that the applicant:

1. Exhibits adequate knowledge of the parking, mooring, docking, beaching, and the securing airplane procedures.
2. Demonstrates adequate knowledge of the airplane forms/logs to record the flight time/discrepancies.



## **APPENDIX 1**

### **TASK VS. SIMULATION DEVICE CREDIT**





## **APPENDIX 1—AIRPLANES**

### **TASK VS. SIMULATION DEVICE CREDIT**

Examiners conducting the Airline Transport Pilot and Aircraft Type Rating Practical Test Standards—Airplane with simulation devices should consult appropriate documentation to ensure that the device has been approved for training, testing, and checking the TASKS in question. The documentation for each device should reflect that the following activities have occurred.

1. The device must be evaluated, determined to meet the appropriate standards, and assigned the appropriate qualification level by the National Simulator Program Manager. The device must continue to meet qualification standards through continuing evaluations as outlined in the appropriate advisory circular (AC). For airplane flight training devices (FTD's), AC 120-45 (as amended), Airplane Flight Training Device Qualification, will be used. For simulators, AC 120-40 (as amended), Airplane Simulator Qualification, will be used.
2. The FAA must approve the device for training, testing, and checking the specific TASKS listed in this appendix.
3. The device must continue to support the level of student or applicant performance required by this PTS.

**NOTE:** Users of the following chart are cautioned that use of the chart alone is incomplete. The description and Objective of each TASK as listed in the body of the PTS, including all NOTES, must also be incorporated for accurate simulation device use.

#### **USE OF CHART**

- |          |   |
|----------|---|
| <b>X</b> | <b>Creditable.</b>  |
| <b>A</b> | <b>Creditable if appropriate systems are installed and operating.</b> |

- NOTE:**
1. The airplane may be used for all tasks.
  2. For the Airline Transport Pilot Certificate, not more than 50 percent of the maneuvers may be accomplished in an FTD or simulator unless:
    - a. each maneuver has been satisfactorily accomplished for an instructor in the appropriate airplane not less than three times, or
    - b. the applicant has logged not less than 1,500 hours of flight time as a pilot.
  3. Level C simulators may be used as indicated only if the applicant meets established prerequisite experience requirements.
  4. Training Devices below Level 4 may NOT be used for airplane type ratings.
  5. Standards for and use of Level 1 Flight Training Devices have not been determined.



# FLIGHT TASK

## FLIGHT SIMULATION DEVICE LEVEL

### Area of Operation : Section Two

#### g. Preflight Procedures

	1	2	3	4	5	6	7	A	B	C	D
A. Preflight Inspection (Cockpit Only)		A	X	A	A	X	X	X	X	X	X
B. Powerplant Start		A	X	A	A	X	X	X	X	X	X
C. Taxiing										X	X
D. Pretakeoff Checks		A	X	A	A	X	X	X	X	X	X

#### h. Takeoff and Departure Phase

A. Normal and Crosswind Takeoff										X	X
B. Instrument Takeoff (Levels 3, 6, & 7 require a visual sys. approved in accordance with AC 120-40, as amended)			X			X	X	X	X	X	X
C. Powerplant Failure During Takeoff								X	X	X	X
D. Rejected Takeoff (Levels 3, 6, & 7 require a visual sys. approved in accordance with AC 120-40, as amended)			X			X	X	X	X	X	X
E. Departure Procedure			X			X	X	X	X	X	X

#### i. Inflight Maneuvers

A. Steep Turns			X			X	X	X	X	X	X
B. Approaches to Stalls (Use of Levels 3, 6, & 7 require operational synthetic stall warning system)			X			X	X	X	X	X	X
C. Powerplant Failure—Multiengine Airplane								X	X	X	X
D. Powerplant Failure—Single-Engine Airplane			X			X	X	X	X	X	X
E. Specific Flight Characteristics	Level of device as determined by the airplane Flight Standardization Board (FSB)										
F. Recovery From Unusual Attitudes							X	X	X	X	



# FLIGHT TASK

## FLIGHT SIMULATION DEVICE LEVEL

### Areas of Operation : Section Two

1 2 3 4 5 6 7 A B C D

#### II. Instrument Procedures

##### A. Standard Terminal Arrival/Flight Management System

###### Procedures for Arrivals

##### B. Holding

##### C1. Precision Instrument Approach (All Eng. Operating)

###### (Autopilot/Manual Flt. Dir. Assist/Manual Raw Data)

###### (Levels 2 & 5 use limited to A/P coupled approach only)

##### C2. Precision Instrument Approach (One Eng. Inop.)

###### (Manual Flt. Dir. Asst/Manual Raw Data)

##### D. Nonprecision Instrument Approach (Not more than one

###### authorized in a device less than Level A simulator)

###### (Levels 2 & 5 use limited to A/P coupled approach only)

##### E. Circling Approach (each appr. must be specifically auth.)

##### F1. Missed Approach (Normal)

##### F2. Missed Approach (Powerplant Failure)

		X			X	X	X	X	X	X	X
		X			X	X	X	X	X	X	X
	A	X			A	X	X	X	X	X	X
								X	X	X	X
	A	X			A	X	X	X	X	X	X
								X	X	X	X
		X				X	X	X	X	X	X
								X	X	X	X

#### III. Landings and Approaches to Landings

##### A. Normal and Crosswind Approaches and Landings

##### B. Landing From a Precision Approach

##### C. Approach and Landing with (Simulated) Powerplant

###### Failure—Multiengine Airplane

##### D. Landing From Circling Approach

##### E. Rejected Landing

##### F. Landing From a No Flap or a Nonstandard Flap Approach

								X	X		
								X	X		
										X	X
										X	X
								X	X	X	X
										X	X



# FLIGHT TASK

## FLIGHT SIMULATION DEVICE LEVEL

### Areas of Operation : Section Two

#### II. Normal and Abnormal Procedures (\*1) (\*2)

	1	2	3	4	5	6	7	A	B	C	D
A. Powerplant (including shutdown & restart)		A	X	A	A	X	X	X	X	X	X
B. Fuel System		A	X	A	A	X	X	X	X	X	X
C. Electrical System		A	X	A	A	X	X	X	X	X	X
D. Hydraulic System		A	X	A	A	X	X	X	X	X	X
E. Environmental and Pressurization Systems		A	X	A	A	X	X	X	X	X	X
F. Fire Detection and Extinguisher Systems		A	X	A	A	X	X	X	X	X	X
G. Navigation and Avionics Systems		A	X	A	A	X	X	X	X	X	X
H. Automatic Flight Control System, Electronic Flight Instrument System, and Related Subsystems		A	X	A	A	X	X	X	X	X	X
I. Flight Control Systems								X	X	X	X
J. Anti-ice and Deice Systems		A	X	A	A	X	X	X	X	X	X
K. Aircraft and Personal Emergency Equipment		A	X	A	A	X	X	X	X	X	X
L. Others, as determined by make, model, or series				A	A	X	X	X	X	X	X

#### II. Emergency Procedures

A. Emergency Descent (Max. Rate)			X			X	X	X	X	X	X
B. Inflight Fire and Smoke Removal		A	X	A	A	X	X	X	X	X	X
C. Rapid Decompression		A	X	A	A	X	X	X	X	X	X
D. Emergency Evacuation			X			X	X	X	X	X	X
E. Others (as may be required by AFM)		A	X	A	A	X	X	X	X	X	X





**FLIGHT TASK****FLIGHT, SIMULATOR, DEVICE LEVEL****Areas of Operation : Section Two****1 2 3 4 5 6 7 A B C D****IX. Postflight Procedures****A. After-Landing Procedures****B. Parking and Securing**

A	X	A	A	X	X	X	X	X	X
A	X	A	A	X	X	X	X	X	X

(\*1) Evaluation of normal and abnormal procedures may be accomplished in conjunction with other events.

(\*2) Situations resulting in asymmetrical thrust or drag conditions (i.e., asymmetrical flight controls) must be accomplished in at least a Level A device. However, shutdown and restart (procedures only) may be accomplished in a properly equipped FTD.



$p_1 = 240 \text{ kPa}$

$p_2 = 270 \text{ kPa}$

$p_3 = 280 \text{ kPa}$

$p_4 = 270 \text{ kPa}$

$p_5 = 240 \text{ kPa}$

$p_6 = 270 \text{ kPa}$

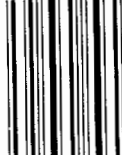
1

$p_7 = 240 \text{ kPa}$

ISBN 0-16-051187-9



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